# EXHIBIT 8

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571-272-7822

Paper 10
Entered: November 21, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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MASIMO CORPORATION,
Petitioner,

v.

APPLE INC.,
Patent Owner.

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IPR2023-00807
Patent 11,474,483 B2

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Before KEN B. BARRETT, SCOTT A. DANIELS, and ROBERT L. KINDER, *Administrative Patent Judges*.

KINDER, *Administrative Patent Judge*.

# DECISION
Denying Institution of *Inter Partes* Review
*35 U.S.C. § 314*

# I. INTRODUCTION

## *A. Background and Summary*

Masimo Corporation ("Petitioner")[1] filed a Petition requesting *inter partes* review of U.S. Patent No. 11,474,483 B2 ("the '483 patent," Ex. 1001). Paper 1 ("Pet."). The Petition challenges the patentability of claims 1–20 of the '483 patent. Apple Inc. ("Patent Owner")[2] filed a Preliminary Response to the Petition. Paper 7 ("Prelim. Resp."). With our permission, Petitioner filed a Reply to address issues under § 325(d) discretionary denial (Paper 8), and Patent Owner filed a Sur-reply (Paper 9).

We have authority to determine whether to institute an *inter partes* review, under 35 U.S.C. § 314 and 37 C.F.R. § 42.4. An *inter partes* review may not be instituted unless it is determined that "the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314 (2018); *see also* 37 C.F.R. § 42.4(a) ("The Board institutes the trial on behalf of the Director.").

For the reasons set forth below, upon considering the Petition, Preliminary Response, and evidence of record, we conclude that the information presented in the Petition fails to establish a reasonable likelihood that Petitioner will prevail in showing the unpatentability of any of the challenged claims. Accordingly, we decline to institute an *inter partes* review.

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[1] Petitioner identifies Masimo Corporation as the real party-in-interest. Pet. 1.

[2] Patent Owner identifies Apple Inc. as the real party-in-interest. Paper 3.

*B. Related Proceedings*

Both parties identify, as a matter involving or related to the '483 patent, *Apple Inc. v. Masimo Corporation and Sound United, LLC*, No. 1:22-cv-01378-MN (D. Del.). Pet. 1; Paper 3.

*C. The '483 Patent*

The '483 patent is titled "Wearable Electronic Device," and "relates to an electronic device, and more specifically to a wearable electronic device having a range of features, including touch input, force input, an interchangeable attachment system, health monitoring functionality, wireless power charging, wireless authentication and transaction functionality, and other features and functionality." Ex. 1001, code (54), 2:51–57. The '483 patent claims priority through a series of continuation applications to Provisional Application No. 62/044,974, which was filed September 2, 2014. *Id.* at codes (60), (63).

The '483 patent seeks to provide a "wearable electronic device that is configured to provide an expansive feature set integrated or incorporated into a compact form factor," "including biometric sensing." *Id.* at 3:11–20; *see also id.* at 4:11–13 ("the device includes a biosensor module"). The "biosensor module may include an array of light sources [that are] configured to emit light into a body of the user, and a photodetector configured to receive light produced by a light source of the array of light sources that is reflected from the body and produce a sensor signal." *Id.* at 5:63–6:1.

Figure 16 is a diagram of a wearable electronic device having biosensors.

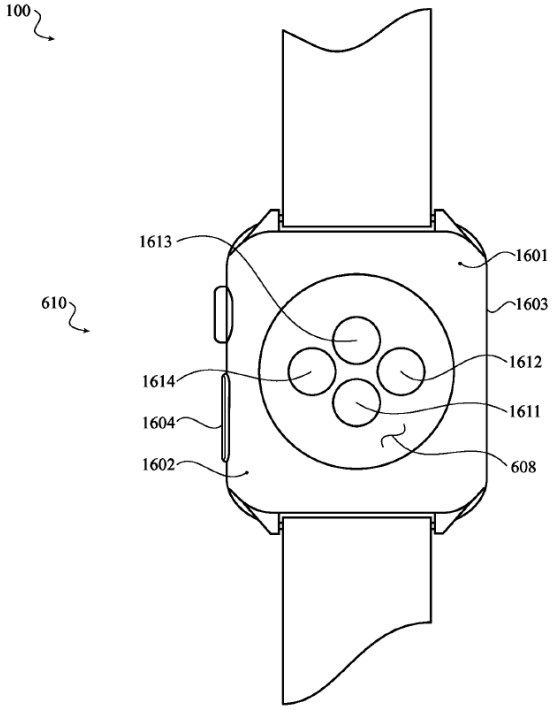


Figure 16 shows light sources 1611–1613, detector 1614, which may operate as a photoplethysmography (PPG) sensors, first electrode 1601, second electrode 1602, on the rear face of device 100, and third electrode 1603 and fourth electrode 1604, which may be disposed along a periphery of the device body 610, and rear cover 608. *Id.* at 41:12–42:32.

The '483 patent discloses that:

> Using the electrodes of the device, various electrical measurements may be taken, which may be used to compute a health metric or other health-related information. By way of example, the electrodes may be used to detect electrical activity of the user's body. In some cases, the electrodes may be configured to detect electrical activity produced by the heart of the user to measure heart function or produce an electrocardiograph (ECG).

*Id.* at 41:44–51. In certain embodiments, the '483 patent provides a wrist-worn device that "integrate[s] or combine[s] multiple subsystems"—including one or more biosensors such as optical sensors and electrical

sensors—"into a single device" to provide a wrist-worn device with a wide range of health monitoring capabilities. *Id.* at 3:11–21, 4:11–22, 9:60–10:5.

### *D. Illustrative Claim*

Claims 1, 10, and 16 are independent claims. Claim 1, reproduced below, is illustrative.

> 1. A wearable electronic device comprising:
> a housing defining a first opening and a second opening;
> a display positioned at least partially within the first opening;
> a front cover positioned over the display and defining at least a portion of a front exterior surface of the wearable electronic device;
> a biosensor module comprising:
> a rear cover positioned at least partially within the second opening and defining an optically transparent window and a protruding convex surface;
> an optical sensor aligned with the optically transparent window;
> a first electrode positioned along a rear surface of the wearable electronic device; and
> a second electrode positioned along the rear surface of the wearable electronic device; and
> a third electrode positioned along a side of the wearable electronic device, wherein:
> the wearable electronic device is configured to measure a first physiological parameter of a wearer using the optical sensor; and
> the wearable electronic device is configured to measure a second physiological parameter using the first electrode, the second electrode, and the third electrode.

Ex. 1001, 60:2–28.

*E. Evidence*

Petitioner relies on the following references:

| Name | Reference | Exhibit(s) |
|---|---|---|
| Kotanagi | WO 2005/092182 A1, pub. Oct. 6, 2005 | 1005 |
| Honda | US, 6,265,789 B1, issued July 24, 2001 | 1006 |
| Kateraas | US 2012/0221254 A1, pub. Aug. 30, 2012 | 1014 |
| Collopa | WO 2015/150199 A1, pub. Oct. 8, 2015 | 1020 |
| Schmid | US 4,375,219, issued Mar. 1, 1983 | 1029 |
| Tran | US 2007/0276270 A1, pub. Nov. 29, 2007 | 1034 |
| Fraser | US 2015/0355604 A1, pub. Dec. 10, 2015 | 1041 |
| Miller | US 8,624,836 B1, issued Jan. 7, 2014 | 1049 |

Petitioner also relies on the declaration of R. James Duckworth, Ph.D. (Ex. 1003) in support of its arguments. The parties rely on other exhibits and evidence as discussed below.

*F. Asserted Grounds of Unpatentability*[3]

Petitioner asserts that the challenged claims are unpatentable on the following grounds:

| Claim(s) Challenged | 35 U.S.C. §[4] | Reference(s)/Basis |
|---|---|---|
| 1–3, 5, 6, 8, 10–14, 16–20 | 103 | Kotanagi, Coppola |
| 1–3, 5, 6, 10–14 | 103 | Kotanagi, Schmid |
| 4 | 103 | Kotanagi, Coppola, Tran |
| 15 | 103 | Kotanagi, Coppola, Kateraas |
| 7 | 103 | Kotanagi, Coppola, Fraser |
| 7 | 103 | Kotanagi, Schmid, Fraser |
| 9 | 103 | Kotanagi, Coppola, Honda |
| 9 | 103 | Kotanagi, Schmid, Honda |
| 8 | 103 | Kotanagi, Coppola, Miller |
| 8 | 103 | Kotanagi, Schmid, Miller |

## II. ANALYSIS OF PETITIONER'S CHALLENGES

*A. Principles of Law*

Petitioner bears the burden of persuasion to prove unpatentability of the claims challenged in the Petition, and that burden never shifts to Patent

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[3] Petitioner places its "Grounds Listing" before page one of the Petition suggesting it may not have been included in the word count for the Petition. *See* 37 C.F.R. § 42.24 (listing specific items that are permitted to be excluded from word count, but not listing the asserted grounds of unpatentability).

[4] The Leahy-Smith America Invents Act ("AIA") includes revisions to 35 U.S.C. §§ 102 and 103 that became effective on March 16, 2013. Because the earliest filed application identified in the '483 patent has a filing date of Sept. 2, 2014 (Ex. 1001, codes (60), (63), 1:6–2:47), we apply the AIA-versions of 35 U.S.C. §§ 102 and 103.

Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4), if present, any objective evidence of obviousness or non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

*B. The Level of Ordinary Skill in the Art*

In determining the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quoting *Custom Accessories, Inc. v. Jeffrey–Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed.Cir.1986)).

Petitioner contends that:

> A POSITA [person of ordinary skill in the art] of the '483 patent would have had at least a bachelor's degree in a discipline related to biomechanical devices, such as Mechanical Engineering, Biomedical Engineering, Electrical Engineering, Physics, Industrial Design, or an equivalent discipline, and at

> least three years of experience working with or developing electronic medical or consumer devices.

Pet. 8 (citing Ex. 1003 ¶¶ 33–36).

Patent Owner contends that:

> a person of ordinary skill in the art on or about the claimed priority date of the '483 Patent would have had at least a bachelor's degree in electrical engineering, mechanical engineering, biomedical engineering, computer engineering, physics, or a related field, and would have had at least two years of relevant work experience with capture and processing of data or information, including but not limited to physiological information, or equivalents thereof. Less work experience may be compensated by a higher level of education and vice versa.

Prelim. Resp. 17–18. Patent Owner's proposal is similar in scope to Petitioner's person of ordinary skill in the art. Patent Owner extends the scope, however, to those versed in "capture and processing of data or information," which is unnecessarily broad and encompasses subject matter unrelated to the problems faced by the inventors of the '483 patent.

Petitioner's definition is consistent with the level of ordinary skill reflected in the prior art references of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (recognizing that the prior art itself may reflect an appropriate level of skill in the art). For purposes of this decision, we apply Petitioner's definition of the person of ordinary skill in the art.

### *C. Claim Construction*

We apply the same claim construction standard used in district court actions under 35 U.S.C. § 282(b), namely that articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). In applying that standard, claim terms generally are given their ordinary and customary meaning as would have been understood by a person of ordinary

skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner proposes construing "defining an optically transparent window." Pet. 8–10. Petitioner proposes that "for a cover to 'define' an optically transparent window simply means to allow passage of light to a relevant component through the cover." *Id.* at 10.

Patent Owner "does not object to the constructions proposed by Petitioner at this time." Prelim. Resp. 18.

For purposes of this Decision, and based on the record before us, we determine that no express construction of any term is necessary. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

### *D. The Alleged Obviousness of Claims 1–3, 5, 6, 8, 10–14, and 16–20 Over Kotanagi and Coppola*

Petitioner alleges that claims 1–3, 5, 6, 8, 10–14, and 16–20 would have been obvious over Kotanagi and Coppola. Pet. 15–56. For reasons discussed below, we determine that Petitioner has not shown a reasonable likelihood that it would prevail in its obviousness challenge based on Kotanagi and Coppola.

*1. Kotanagi (Ex. 1005)*

Kotanagi is titled "Biological Information Measuring Device" and it relates to a device "capable of measuring biological information such as pulse rate while mounted to the wrist (arm)." Ex. 1005, code (54) ¶ 1. Kotanagi describes the problem in wrist-mounted measuring devices, that "the movement of the user causes muscles to move and changes the thickness (diameter) of the wrist, which leads to the risk that a gap may be formed between the biological information measuring device and the living body surface." *Id.* ¶ 4. "This diminishes adherence, which may prevent accurate biological information from being detected." *Id.*

Kotanagi addresses these issues, in part, through use of a "contact detection part," which "includes at least a pair of electrodes" that are used to "detect[] whether the light-emitting part and the light-receiving part are in contact with the living body surface based on a potential difference between the pair of electrodes." *Id.* ¶ 13. Kotanagi explains that "the electrodes need not be a pair, and a plurality of electrodes, for example, may be provided so that contact can be detected based on the potential difference between each of the electrodes." *Id.* ¶ 14. Further, "[b]y detecting the potential difference between the pair of electrodes, it can be easily and reliably detected whether the light-emitting part and the light-receiving part are indeed in contact with the living body surface." *Id.*

Kotanagi further discloses a measuring device that comprises a biological sensor, a protruding part that protrudes from the lower surface of the main body, a light-emitting part and light-receiving part, and, as noted above, a contact detection part for detecting whether the light-emitting and light-receiving parts are in contact with the body surface. *Id.* ¶ 7. The device also includes a "biological information detection part which is

provided on the main body and detects biological information based on the biological information signal; wherein the biological sensor part is disposed on a lower surface of the protruding part." *Id.* Figure 2, reproduced below, is a side-view of Kotanagi's device.

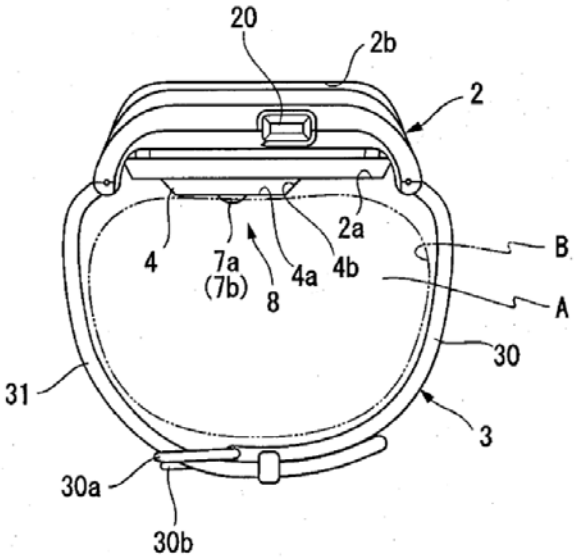



Figure 2 of Kotanagi shows measuring device 1, with housing (main body) 2, fixing means 3, lower surface 2a, protruding part 4, biological sensor part 8, LED (Light Emitting Diode) (light-emitting part) 5, PD (Photodetector) (light-receiving part) 6, contact detection means 7, and lower surface 4a of protruding part 4. *Id.* ¶¶ 45–46.

Kotanagi discloses that "[i]n the biological information measuring device . . . light is emitted toward the living body from the light-emitting part after the main body is mounted to the wrist (arm)," and "[a] portion of the emitted light is absorbed, for example, by hemoglobin in blood vessels, and another portion of the light is reflected by biological tissue." *Id.* ¶ 8. In this embodiment, "[t]he light-receiving part receives this reflected light and generates a biological information signal such as a pulse signal corresponding to the amount of received light." *Id.* "The biological

information detection means then performs prescribed processing on the biological information signal so that biological information such as pulse rate can be detected." *Id.*

Kotanagi further discloses that "the pair of electrodes are disposed so as to sandwich the light-emitting part and the light-receiving part therebetween," which facilitates a signal representative of "whether the light-emitting part and the light-receiving part are indeed in contact with the living body surface." *Id.* ¶¶ 14–16. As Kotanagi explains, "when the main body is mounted to the arm, the pair of electrodes come into contact with the living body surface so that a discharge occurs through the living body surface," to allow for a determination of whether "the potential between the electrodes decreases." *Id.* ¶ 14. Kotanagi notes that "the electrodes need not be a pair, and a plurality of electrodes, for example, may be provided." *Id.*; *see also id.* ¶ 86 ("[A]lthough the contact detection means has a pair of electrode[s], it is not limited to a pair and may also have a plurality of electrodes" and "the contact detection means should be set to detect whether there is contact based on the potential difference between each of the electrodes.").

*2. Coppola (Ex. 1020)*

Coppola is titled "System and Method for Detecting Variation of Heart Rate of a User," and "it relates to a system and method for detecting variation of heart rate" as well as "diagnostic investigation of arrhythmias, in particular in the detection of atrial fibrillation." Ex. 1020, codes (54), 1:3–6. Coppola seeks an accurate and user-friendly way to detect heart rate, and uses a two-step process: "in a first stage, the detection is based on an optical measurement while in a second stage the detection is based on an electrical measurement." *Id.* at 3:18–20.

Coppola's Figure 3 illustrates a side-view diagram of the device on a user's arm.

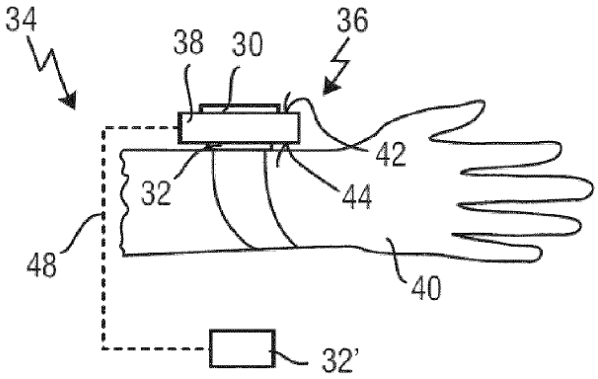



Figure 3 depicts Coppola's device on a user's wrist, and illustrates system 34, wearable device 10, wristwatch-like device 36, housing 38, first electrode 30 on a first surface 42, and second electrode 32 on second surface 44, where second electrode 32 may be in permanent contact with the skin of the wrist or arm 40. *Id.* at 12:16–25.

Coppola discloses that "the first electrode is arranged on a first surface of the housing in contact with the wrist wearing the housing and the second electrode is arranged on a second surface of the housing," so that "the first electrode is already in constant contact with one of the user's wrists so that the user wearing the device only needs to bring one finger of his/her second hand into contact with the second electrode." *Id.* at 6:11–17. Coppola additionally contemplates that "[b]y placing first electrode 30 not on the front side 42, but on the side of the watch or on the strap instead, the GUI element 46 can cover the whole front side 42 of the watch." *Id.* at 13:14–16.

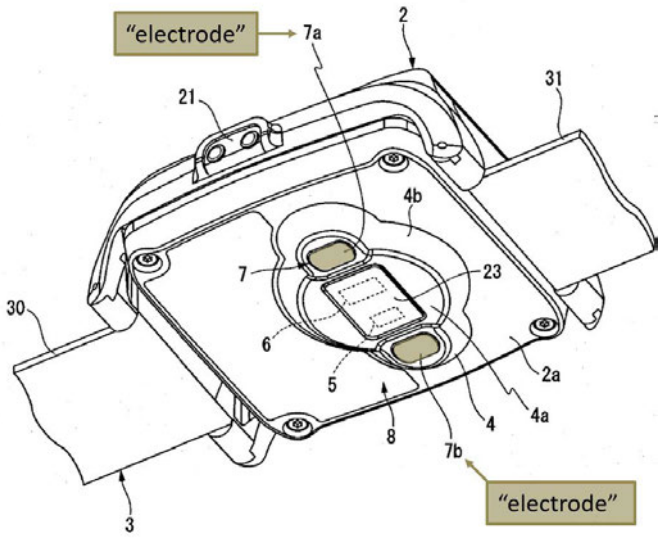
*3. Analysis Claims 1, 10, and 16*

The independent claims of the '483 patent require a wearable electronic device (or watch) with an optical sensor that measures a first

physiological parameter. *See, e.g.*, Ex. 1001, 60:13–24. Pertinent for our analysis, the claims also require a first and second electrode positioned along the rear surface of wearable electronic device, and "a third electrode positioned along a side of the wearable electronic device." *Id.* at 60:15–21, 61:14–19, 62:10–15. Next, the claims require "the wearable electronic device is configured to measure a second physiological parameter using the first electrode, the second electrode, and the third electrode." *Id.* at 60:25–28, 61:23–25, 62:19–22.

Petitioner Contentions

Petitioner relies on "Kotanagi's rear electrodes 7a and 7b," which "are intended for detecting whether there is contact with a living body surface," as teaching the required first and second electrode positioned along a rear surface as depicted below. Pet. 23.




Petitioner's annotated Figure 5 of Kotanagi shows the rear surface of the biological information measuring device with electrodes 7a and 7b highlighted. *Id.* As for the claimed "third electrode positioned along a side of the wearable electronic device," Petitioner recognizes that Kotanagi

contemplates use of a plurality of electrodes for detecting a potential difference (measuring skin contact), but Petitioner relies specially on Coppola as teaching this claim limitation. Pet. 23–24.

In light of Coppola, Petitioner contends "a POSITA would have configured Kotanagi's multiple electrodes for ECG measurements to enhance its optical measurements." Pet. 24–25 (citing Ex. 1003 ¶¶ 134–135). Petitioner contends that "Coppola teaches placing an electrode on the side or strap of a biosensing watch," and "a POSITA would have known to add a third electrode and, by positioning it on the side (Kotanagi already has two in the rear), enabling ECG measurement while leaving room for a larger screen (and any existing buttons) on the front." Pet. 25–26 (citing Ex. 1009, 16:21–23; Ex. 1020, 14:14–16; Ex. 1003 ¶¶ 136–138).

Patent Owner Contentions

Patent Owner first contends "Kotanagi does not disclose any ECG capability in its wrist-worn device, and its disclosed electrodes, which are only provided on the rear surface of its wrist-worn device, are used to detect skin contact—and not to measure ECG." Prelim. Resp. 2. In contrast, "Coppola contemplates ECG measurements, but does not disclose measuring ECG using two rear surface electrodes and an electrode positioned along a side of the device." *Id.* at 2–3. Patent Owner reasons that "the Petition also fails to explain how Kotanagi's device, which has electrodes that only facilitate skin contact detection, would be configured to additionally enable ECG measurements, particularly using the particular configuration recited in the claims." *Id.* at 3.

Patent Owner contends that considering both Kotanagi and Coppola, a person of ordinary skill in the art would not have reason to selectively pick

portions of each reference while also ignoring Kotanagi's designed purpose. *Id.* at 32–35. Patent Owner argues that Kotanagi's contact detection part, through its electrodes, is designed to detect whether the light-emitting part and the light-receiving part are in contact with the living body surface based on a potential difference between the pair of electrodes. *Id.* at 33. Thus, according to Patent Owner, given the skin contact detection function of the electrodes, Kotanagi's electrodes would always need to be positioned on the rear surface of the device in contact with a portion of a body, and "positioning any of Kotanagi's electrode on a device surface other than the surface that contacts the wrist of the wearer would frustrate the above-described skin contact detection function of Kotanagi's electrodes." *Id.* at 34.

Patent Owner contends that Petitioner's proposed combination is flawed for two additional reasons. *Id.* at 35. First, Patent Owner argues:

> Kotanagi does not disclose or contemplate any ECG capability, nor does it disclose or suggest electrode positioning on any surface other than the device's rear surface. As such, even if there are health benefits stemming from measuring electrocardiography, as Petitioner asserts (Petition, 27-28), the Petition fails to demonstrate how such functionality would be implemented in Kotanagi's device. In particular, even if additional electrodes could be added to Kotanagi's device in view of Coppola (as Petitioner alleges), the Petition and the associated expert testimony does not explain how the device would be configured to leverage the existing electrodes and any additional electrodes—which are only used for skin contact detection in Kotanagi—to now also enable ECG measurements.

Prelim. Resp. 35 (citing Pet. 23–32).

Second, Patent Owner assumes Petitioner's proposed combination could implement ECG capability in Kotanagi's device and add a third

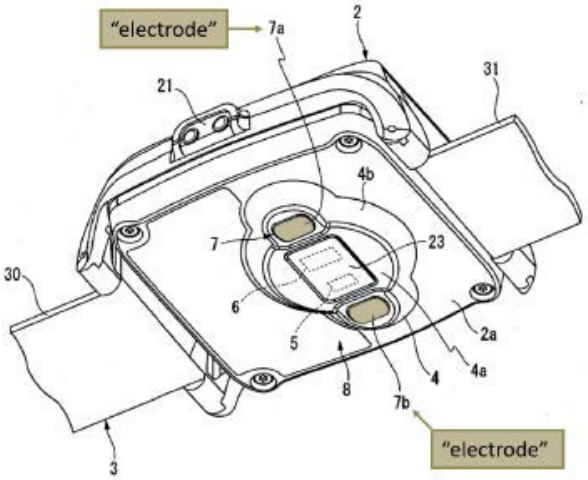
electrode to the device's side wall. Even if true, Patent Owner contends that "Kotanagi and Coppola (alone or in combination) do not contemplate ECG measurements using two electrodes on the rear surface of the device and a third electrode positioned along a side of the device, as required by the claims." *Id.* at 36. Patent Owner notes that "Kotanagi does not disclose any ECG functionality and thus, it follows that Kotanagi also does not disclose any ECG measurements that are performed using the rear electrodes of its device (which are only used for skin contact detection)." *Id.* Further, Patent Owner argues that "Coppola does not disclose any embodiments in which ***two electrodes on a rear surface of the device*** and a side electrode are used to measure ECG," but instead, "Coppola only discloses a wrist-worn device where ***a single rear surface electrode and a side surface electrode*** are used for measuring ECG." *Id.* at 36–37 (citing Ex. 1009, 12:22–31). "Thus," according to Patent Owner, Coppola's "ECG measurement is performed using only a single rear surface electrode and a single side surface electrode." *Id.* at 38 (citing Ex. 1009, 6:16–32, 14:3–5). Patent Owner contends that "[i]ndeed, Coppola discloses that each of its electrodes is intended to be contacted by a different body part." *Id.* at 42 (citing Ex. 1009, 5:30–32, 6:16–32, 14:3–5). Thus, Patent Owner argues that "there is no teaching or suggestion in Coppola or Kotanagi for measuring ECG (i.e., the alleged second physiological parameters) using an electrode positioned along a side surface of the device ***and two electrodes*** positioned along the rear surface of the device." *Id.* at 42–43.

Discussion

Petitioner does not explain persuasively why a person of ordinary skill in the art would have reconfigured Kotanagi's two rear electrodes meant for

determining whether a potential between the electrodes decreases (to indicate lack of skin contact) to enable ECG measurements using the particular configuration recited in the claims. We have considered Petitioner's contentions in light of both Kotanagi and Coppola and Petitioner's proposed combination appears hindsight driven. The combination requires that a person of ordinary skill in the art selectively pick portions of each reference while also frustrating the purpose of Kotanagi's electrodes of ensuring skin contact by determining a potential difference.

Kotanagi's wrist-worn device includes electrodes on the device's rear surface and those electrodes are used for detecting skin contact. Ex. 1005 ¶¶ 4, 13–15, 86. Kotanagi's contact detection part, through its electrodes, "detects whether the light-emitting part and the light-receiving part" (which are labeled as 5 and 6 in the image below) "are in contact with the living body surface based on a potential difference between the pair of electrodes." *Id.* ¶ 13.




Petitioner's annotated Figure 5 of Kotanagi shows the rear surface of the biological information measuring device with electrodes 7a and 7b highlighted. Pet. 23. As Kotanagi explains, when the device's main body

"is mounted to the arm, the pair of electrodes come into contact with the living body surface so that a discharge occurs through the living body surface," and "the potential between the electrodes decreases." Ex. 1005 ¶ 14 ("it can be easily and reliably detected whether the light-emitting part and the light receiving part are indeed in contact with the living body surface"). Accordingly, the purpose of Kotanagi's electrodes requires them to be in contact with the skin and thus positioned on the rear surface of Kotanagi's wearable device.

Petitioner does not address the technical and biological effects of adding a third non-skin contacting electrode for ECG measurements to Kotanagi's skin contact detection electrodes. *See* Pet. 24 (Petitioner arguing that "a POSITA would have configured Kotanagi's multiple electrodes for ECG measurements to enhance its optical measurements."). This is important because it is not clear how a non-skin contacting electrode would affect obtaining accurate skin adherence information on a device surface other than the surface that contacts the wrist of the wearer. *See generally* Pet. Essentially, Petitioner proposes combining Kotanagi and Coppola in a manner—that is with an ECG sensor, without explaining how this would further Kotanagi's specific purpose of ensuring skin contact to enhance adherence. *See* Ex. 1005 ¶ 5 ("an object thereof is to provide a biological information measuring device which enhances adherence"). Petitioner does not provide persuasive support or explanation why a person of ordinary skill in the art would sacrifice the necessary skin contact adherence function of Kotanagi's sensors in favor of the proposed combination. *See, e.g.*, *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (discussing "proposition that if the combination of references would change the principle of operation of

the prior art, then the teachings cannot suffice to render claims obvious" (citing *In re Ratti,* 270 F.2d 810, 813 (CCPA 1959)).

Petitioner provides explanation about the potential benefits, i.e., results, of using Kotanagi's skin contact electrodes as ECG measuring electrodes. For example, Dr. Duckworth testifies that "[a]dding ECG capability to Kotanagi would have been highly desirable—e.g., to help address atrial fibrillation problems." Ex. 1003 ¶ 143. Further, Dr. Duckworth testifies that "[a] POSITA would have used Coppola simply to add a third electrode (e.g., to the side) and configure the electrodes for ECG measurement as Kotanagi already teaches electrodes to measure an electrical potential." *Id.* ¶ 146.

We are not persuaded by Petitioner's arguments and Dr. Duckworth's testimony. Petitioner does not explain sufficiently the processes and effects between measuring a potential difference between the pair of electrodes for purposes of skin contact and the use of electrodes for determining ECG. Further, Petitioner does not explain sufficiently whether the proposed combination would do away with Kotanagi's intended purpose of using electrodes to determine skin contact. For example, the claims require "a second physiological parameter" be measured using all three electrodes. Ex. 1001, 60:25–28. Petitioner alludes that Kotanagi's "potential difference" measuring skin contact is a "physiological parameter." Pet. 27. Yet, Petitioner then states that measuring ECG is the "second physiological parameter." Pet. 29. The claims require the same physiological parameter be measured by all three electrodes, and Petitioner seemingly relies on measuring ECG as the second physiological parameter, but this is unclear. *Id.* As addressed below, Petitioner's contentions are not supported

adequately regardless of whether Petitioner relies on ECG measurements as the sole second physiological parameter or whether Petitioner relies on both ECG measurements and potential difference to determine skin contact as the second physiological parameters.

If Petitioner's proposed combination intended to do away with Kotanagi's capability of determining skin contact and adopt ECG measurements as the only second physiological parameter, it is Petitioner's burden to address whether the combination would frustrate Kotanagi's purpose. *See Dynamic Drinkware, LLC*, 800 F.3d 1375 at 1378. Based on the record before us, Petitioner does not explain adequately whether a person of ordinary skill in the art would have been dissuaded from the particular combination if the capability of determining skin contact in Kotanagi is frustrated or removed. *See* Ex. 1005 ¶ 5 ("to provide a biological information measuring device which enhances adherence"), ¶¶ 6–7 ("The present invention provides the following means for solving the problem described above. . . . a contact detection means for detecting whether the light-emitting part and the light-receiving part are in contact with the living body surface."). Removing Kotanagi's capability of determining skin contact removes Kotanagi's intended purpose and "[o]bviousness may be defeated if the prior art indicates that the invention would not have worked for its intended purpose." *Meiresonne v. Google, Inc.*, 849 F.3d 1379, 1382 (Fed. Cir. 2017).

If Petitioner intended to maintain Kotanagi's capability to determine skin contact in a combination that also determines ECG, Petitioner does not provide persuasive explanation for this combination. *See* Pet. 28 ("[a]dding ECG capability to Kotanagi"). The Petition does not explain adequately

how Kotanagi's device, which has electrodes that facilitate skin contact detection, would be configured to additionally enable ECG measurements using the particular configuration recited in the claims. Thus, even if additional electrodes were added to Kotanagi's device in view of Coppola (as Petitioner alleges), the Petition and the associated expert testimony does not explain adequately how the device would be configured to leverage the existing electrodes and any additional electrodes—which are only used for skin contact detection in Kotanagi—to now also enable ECG measurements.

Further, even presuming the electrode set was capable of being physically combined, the combination would seemingly not work for its intended purpose. Petitioner does not address adequately why a person of ordinary skill in the art would modify the combination to also have a side wall electrode that was meant for determining the loss of skin contact. Petitioner does not provide persuasive explanation as to the purpose of having a skin contact determining electrode positioned along a side wall of the wearable electronic device that would not contact skin. Kotanagi only contemplates measuring a potential difference between electrodes positioned on its device's rear surface because Kotanagi uses potential difference to detect whether the device's optical elements, which are positioned on the rear surface, are in contact with the body. *See* Ex. 1005 ¶¶ 13, 14, 58, 59, 86, Fig. 5. As the Court of Appeals for the Federal Circuit has explained, "[a]lthough predictability is a touchstone of obviousness, the 'predictable result' discussed in KSR refers not only to the expectation that prior art elements are capable of being physically combined, but also that the combination would have worked for its intended purpose." *DePuy Spine,*

*Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326 (Fed. Cir. 2009) (citations omitted)

We find more persuasive Patent Owner's position that "Kotanagi's teachings confirm that its device would not use an electrode on a side surface . . . for any potential difference measurements given that such measurements are intended to inform whether there is contact between the rear surface optical elements and the wearer's body." Prelim. Resp. 44. Regardless, Petitioner does not explain persuasively why a person of ordinary skill in the art would have combined the teachings of Kotanagi and Coppola in the manner suggested.

For these reasons, Petitioner has not established a reasonable likelihood of prevailing on its asserted Kotanagi and Coppola grounds as to claims 1, 10, and 16.

*4. Dependent Claims Challenged Based on Kotanagi and Coppola*

Petitioner challenges claims 2–3, 5, 6, 11–14, and 17–20 as obvious over Kotanagi and Coppola. Petitioner challenges claims 4, 7–9, and 15, as obvious over Kotanagi and Coppola along with an additional reference to teach limitations unique for each claim. Because the remaining dependent claims depend directly or indirectly from claims 1, 10, or 16, for the same reasons as set forth above, Petitioner has not demonstrated a reasonable likelihood of success in challenging these dependent claims.

### *E. The Alleged Obviousness of Claims 1–3, 5, 6, and 10–14 over Kotanagi and Schmid*

Petitioner alleges that claims 1–3, 5, 6, and 10–14 would have been obvious over Kotanagi and Schmid. Pet. 56–62. For reasons discussed below and above, we determine that Petitioner has not shown a reasonable

likelihood that it would prevail in its obviousness challenge based on Kotanagi and Schmid.

*1. Schmid (Ex. 1029)*

Schmid it titled "Electrode for Detecting Bioelectrical Signals." Ex. 1029, code (54). Schmid "relates to electrodes for detecting or for the pickup of bioelectrical signals and, more particularly, to electrode assemblies adapted to determine bioelectrical conditions, especially in association with an apparatus for evaluating and/or plotting such signals as, for example, in EKG evaluations." *Id.* at 1:6–11. Schmid teaches a "heart-frequency measuring assembly" in a "wristwatch housing or case and which contains the electrodes in an electrode set or a plurality of such electrode sets." *Id.* at 5:3–7.

Schmid explains that the "two electrodes (measurement or input electrodes) and the neutral or reference electrode can be disposed in close proximity with measurement results which nevertheless are at least as precise as the electrodes heretofore used for EKG measurements in spite of the many times greater spacing employed with the conventional electrodes." *Id.* at 4:15–22. Figure 1 of Schmid is a side-view diagram of the electrode assembly.

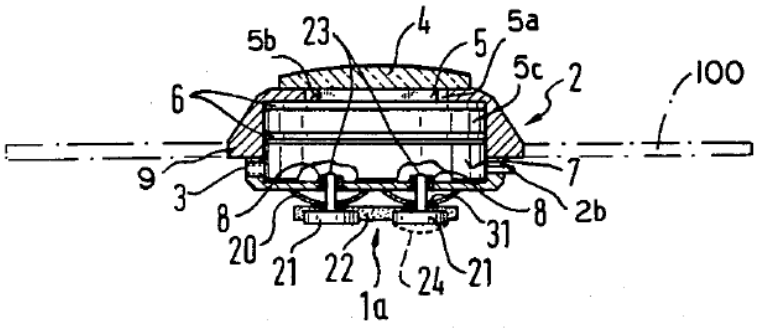



Figure 1 shows housing 2, armband 100, watch-face window 4, battery 7, electrodes 21 (with optional convex surfaces 24), insulating material 22,

contact pins 23, and springs 20. *Id.* at 5:3–6:17. Schmid discloses that "armband 100 and/or the housing 2 can form the neutral or reference electrode." *Id.* at 5:20–22.

*2. Analysis*

Petitioner presents contentions that claims 1–3, 5, 6, and 10–14 would have been obvious over the combined teachings of Kotanagi and Schmid. Pet. 56–62 (discussing reasons for combining the references). More specifically, Petitioner's proposed combination "applies Kotanagi identically to the analysis provided above in Ground 1 for Claims 1–3, 5–6 and 10–14, except that Schmid is used to teach a third electrode." Pet. 56, 62 ("Schmid is applied instead of Coppola to teach a third electrode on the side of the watch for an ECG measurement."). Thus, as discussed above, Petitioner relies on Kotanagi as teaching both the first and second electrode located on the rear of Kotanagi's wearable device and then relies on Schmid for its teachings of adding a third electrode on the side wall. Pet. 22, 23, 56–62.

Patent Owner also makes the same arguments based on Kotanagi as discussed above. Prelim. Resp. 45–46. Patent Owner argues that "as described above in §VII.A, Kotanagi's wrist-worn device does not include the particular configuration of electrodes arranged on the device's rear and side surfaces (as recited in the claims), nor does it teach using electrodes to measure ECG." *Id.* at 45 (citing Ex. 1005 ¶¶ 13–14, Fig. 5). Further, Patent Owner contends that "[i]nstead, and as explained above, Kotanagi's wrist worn device includes electrodes only on its rear surface and those electrodes are used for detecting skin contact (and not for measuring ECG)." *Id.*

Petitioner's contentions regarding the combination of Kotanagi and Schmid are not persuasive for the same reasons as set forth above. For example, Petitioner does not explain persuasively why a person of ordinary

skill in the art would have reconfigured Kotanagi's two rear electrodes meant for determining whether a potential between the electrodes decreases (to indicate lack of skin contact) to enable ECG measurements using the particular configuration recited in the claims. Even with Schmid's third electrode added to a side wall, the Petition does not explain adequately how the device would be configured to leverage the existing electrodes—which are used only for skin contact detection in Kotanagi—and this third electrode to now also enable ECG measurements without frustrating the purpose of Kotanagi as we discussed above.

For these reasons, Petitioner has not established a reasonable likelihood of prevailing on its asserted Kotanagi and Schmid grounds as to claims 1 and 10.

*3. Dependent Claims Challenged Based on Kotanagi and Schmid*

Petitioner challenges claims 2–3, 5, 6, and 11–14 as obvious over Kotanagi and Schmid. Petitioner challenges claims 4, 7–9, and 15, as obvious over Kotanagi and Schmid along with an additional reference to teach limitations unique for each claim. Because the remaining dependent claims depend directly or indirectly from claims 1 or 10, for the same reasons as set forth above, Petitioner has not demonstrated a reasonable likelihood of success in challenging these dependent claims.

## III. CONCLUSION

After considering the evidence and arguments presented in the Petition, we determine that Petitioner has not demonstrated a reasonable likelihood of success in proving that any challenged claim of the '483 patent is unpatentable. Accordingly, we do not institute an *inter partes* review.

## IV. ORDER

In consideration of the foregoing, it is hereby ordered that the Petition is denied, and no trial is instituted.

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Patent 11,474,483 B2

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